

U.S. Patent Application Serial No. 10/537,250
Amendment filed February 21, 2007
Reply to OA dated December 12, 2006

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended): A controller comprising

a valve body having a fluid channel openable and closable with reciprocating upward and downward movement of a valve stem,

a casing fixed to an upper portion of the valve body,

an operating rod provided in an upper inside portion of the casing and movable upward and downward,

drive means for moving the operating rod upward and downward, and

force amplifying means provided in a lower inside portion of the casing for transmitting a force acting on the operating rod to the valve stem upon amplification,

the controller being characterized in that the force amplifying means comprises

a tapered member extending vertically downward from a lower end of the operating rod,

a disk member provided at an upper end of the valve stem, and

a first and a second pivotal member arranged between the two members and opposed to each other with the tapered member positioned therebetween, each of the first and second pivotal

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members being pivotally movable about an axis of a pivot extending through a lower portion thereof, each of the pivotal members having a plate body,

an upper contact face formed on an upper portion of the body and in direct bearing contact with a tapered face of the tapered member, the upper contact face of each pivotal member being in the form of a circular-arc face, and

a lower contact face formed on a lower portion of the body and direct bearing on an upper surface of the disk member, the lower contact face of each pivotal member being in the form of a circular-arc cam face centered about a center line positioned away from the axis of the pivot.

Claim 2 (Currently Amended): ~~A controller according to claim 1~~

A controller comprising

a valve body having a fluid channel openable and closable with reciprocating upward and downward movement of a valve stem,

a casing fixed to an upper portion of the valve body,

an operating rod provided in an upper inside portion of the casing and movable upward and downward,

drive means for moving the operating rod upward and downward, and

force amplifying means provided in a lower inside portion of the casing for transmitting a force acting on the operating rod to the valve stem upon amplification,

the controller being characterized in that the force amplifying means comprises

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a tapered member extending vertically downward from a lower end of the operating rod,

a disk member provided at an upper end of the valve stem, and

a first and a second pivotal member arranged between the two members and opposed to each other with the tapered member positioned therebetween, each of the first and second pivotal members being pivotally movable about an axis of a pivot extending through a lower portion thereof, each of the pivotal members having a plate body,

an upper contact face formed on an upper portion of the body and in bearing contact with a tapered face of the tapered member, and

a lower contact face formed on a lower portion of the body and bearing on an upper surface of the disk member, the lower contact face of each pivotal member being in the form of a circular-arc cam face centered about a center line positioned away from the axis of the pivot,

wherein the first and second pivotal members have respective lower portions lapping over each other, and a common pivot serves for both the pivotal members.

Claim 3 (Previously Presented): A controller according to claim 1 wherein the tapered member is made from a rectangular parallelepiped by giving a slanting face to each of a front and rear side of the tapered member.

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Claim 4 (Previously Presented): A controller according to claim 1 wherein the operation rod is integrally provided at a lower end portion thereof with the tapered member and is integrally provided at an intermediate portion thereof with a piston disposed in a cylinder chamber and slidably upward and downward.

Claim 5 (Canceled):